WHAT IS CLAIMED IS:

1. A system for determining characteristics associated with a communication channel, comprising:

a transmitter for transmitting a first signal via the communication channel;

a receiver for receiving a second signal via the communication channel in response to the first signal,

wherein the second signal is associated with the first signal;

a correlator for performing frequency domain correlation between a frequency domain representation of the second signal and frequency domain representations of a plurality of time-delayed versions of the first signal to generate frequency domain correlation information; and

an analyzer for identifying correlation peaks in a magnitude of the frequency domain correlation information to determine locations of discontinuities of the communication channel,

wherein identified correlation peaks are associated with the locations of the discontinuities of the communication channel.

2. The system of claim 1, wherein the analyzer identifies correlation peaks by determining where magnitudes of the frequency domain correlation information exceed at least one predetermined threshold function.

3. The system of claim 1, wherein the analyzer determines a type of a located discontinuity from among a plurality of types of discontinuities by comparing an amplitude of the identified correlation peak with each of a plurality of predetermined threshold functions,

wherein each type of discontinuity is associated with one of the plurality of predetermined threshold functions.

4. The system of claim 1, wherein the communication channel comprises a transmission line.

5. The system of claim 1, wherein the first signal comprises a stimulus signal, and wherein the transmitter comprises:

a stimulus generator for generating the stimulus signal,

wherein the second signal comprises at least one reflection of the stimulus signal from at least one discontinuity of the communication channel.

6. The system of claim 5, wherein the stimulus signal comprises a narrowband stimulus signal, and

wherein the narrowband stimulus signal mitigates effects of dispersion associated with the communication channel.

7. The system of claim 6, wherein the stimulus generator adaptively determines a packet length of the narrowband stimulus signal based on attenuation associated with the communication channel.

8. The system of claim 6, wherein the narrowband stimulus signal comprises sine packets windowed by a Blackman-Harris function.

9. The system of claim 1, comprising:

means for generating an estimate of a baseline signal by applying the first signal to a model of the communication channel,

wherein the receiver mitigates baseline effects to the second signal by subtracting the estimated baseline signal from the second signal.

10. The system of claim 9, wherein the baseline signal comprises a near-end echo of the first signal associated with transmission of the first signal, and

wherein the second signal comprises the near-end echo and reflections of the first signal by discontinuities of the communication channel.

11. The system of claim 1, wherein the correlator performs a Fourier transform on the second signal to generate the frequency domain representation of the second signal,

wherein the correlator generates the plurality of time-delayed versions of the first signal, and

wherein the correlator performs Fourier transforms on the plurality of time-delayed versions of the first signal to generate the frequency domain representations of the plurality of time-delayed versions of the first signal.

12. The system of claim 11, wherein when at least one attribute of the communication channel is known a priori, a time delay of a first of the plurality of time-delayed versions of the first signal is greater than zero.

13. The system of claim 12, wherein the at least one attribute of the communication channel known a priori comprises a length of the communication channel in which there is an absence of discontinuities of the communication channel.

14. The system of claim 1, wherein a discontinuity of the communication channel comprises one of an open connection in the communication channel, a short in the communication channel, a bridge tap of the communication channel, a change in characteristic impedance of the communication channel, and a discrete lump component,

wherein the discrete lump component includes at least one of a resistor, a capacitor and an inductor.

15. The system of claim 1, wherein the analyzer examines phase information associated with the frequency domain correlation information of the second signal relative to an associated time-delayed version of the first signal to determine a type of a discontinuity of the communication channel.

16. The system of claim 15, wherein the analyzer calculates reflection coefficients for each identified correlation peak using at least the determined locations of the discontinuities of the communication channel, and determines a topology of the communication channel using the reflection coefficients,

wherein the phase information is used for determining a sign of the reflection coefficients.

17. The system of claim 16, wherein when the phase information is within a predetermined range, a sign of a reflection coefficient associated with the identified correlation peak is positive, and

wherein when the phase information is outside the predetermined range, the sign of the reflection coefficient associated with the identified correlation peak is negative.

18. The system of claim 17, wherein when an amplitude of an identified correlation peak exceeds a predetermined threshold function and when the sign of the reflection coefficient associated with the identified correlation peak is positive, the type of discontinuity comprises an open.

19. The system of claim 17, wherein when an amplitude of an identified correlation peak exceeds a predetermined threshold function and when the sign of the reflection coefficient associated with the identified correlation peak is negative, the type of discontinuity comprises a short.

20. The system of claim 17, wherein when an amplitude of a first identified correlation peak is less than a first predetermined threshold function and greater than a second predetermined threshold function, and when the sign of the reflection coefficient associated with the first identified correlation peak is negative, the type of discontinuity comprises a bridge tap.

21. The system of claim 20, wherein a location of the first identified peak comprises a location of the bridge tap, and

wherein when an amplitude of a second identified correlation peak is greater than a third predetermined threshold function, and when the sign of the reflection coefficient associated with the second identified correlation peak is

positive, a difference between a location of the second identified correlation peak and the location of the first identified peak comprises a length of the bridge tap.

22. The system of claim 1, wherein the analyzer determines round trip loss of the communication channel to the determined location of the discontinuity using an amplitude of the identified correlation peak and an amplitude of a reference correlation peak.

23. The system of claim 22, wherein the analyzer determines path loss of the communication channel to the determined location of the discontinuity using the determined round trip loss and at least one characteristic of a type of the discontinuity.

24. A method of determining characteristics associated with a communication channel, comprising the steps of:

transmitting a first signal via the communication channel;

receiving a second signal via the communication channel in response to the first signal,

wherein the second signal is associated with the first signal;

performing frequency domain correlation between a frequency domain representation of the second signal and frequency domain representations of a plurality of time-delayed versions of the first signal to generate frequency domain correlation information; and

identifying correlation peaks in a magnitude of the frequency domain correlation information to determine locations of discontinuities of the communication channel,

wherein identified correlation peaks are associated with the locations of the discontinuities of the communication channel.

25. A system for determining characteristics associated with a communication channel, comprising:

a transmitter for transmitting a first signal via the communication channel;

a receiver for receiving a second signal via the communication channel in response to the first signal, wherein the second signal is associated with the first signal;

a correlator for performing frequency domain correlation between a frequency domain representation of the second signal and frequency domain representations of a plurality of time-delayed versions of the first signal to generate frequency domain correlation information; and

an analyzer for examining phase information associated with the frequency domain correlation information of the second signal relative to an associated time-delayed version of the first signal to determine a type of a discontinuity of the communication channel.

26. A method of determining characteristics associated with a communication channel, comprising the steps of:

transmitting a first signal via the communication channel;

receiving a second signal via the communication channel in response to the first signal, wherein the second signal is associated with the first signal;

performing frequency domain correlation between a frequency domain representation of the second signal and frequency domain representations of a plurality of time-delayed versions of the first signal to generate frequency domain correlation information; and

examining phase information associated with the frequency domain correlation information of the second signal relative to an associated time-delayed version of the first signal to determine a type of a discontinuity of the communication channel.

27. A stimulus-response system for determining characteristics associated with a communication channel, comprising:

a stimulus generator for generating a stimulus signal,

wherein the stimulus signal comprises a narrowband stimulus signal, and

wherein the narrowband stimulus signal mitigates effects of dispersion associated with the communication channel; and

a receiver for receiving a response signal via the communication channel in response to the narrowband stimulus signal,

wherein the response signal comprises at least one reflection of the narrowband stimulus signal from at least one discontinuity of the communication channel.

28. The system of claim 27, wherein the stimulus generator adaptively determines a packet length of the narrowband stimulus signal based on attenuation associated with the communication channel.

29. The system of claim 27, wherein the narrowband stimulus signal comprises sine packets windowed by a Blackman-Harris function.

30. The system of claim 27, comprising:

means for generating an estimate of a baseline signal by applying the narrowband stimulus signal to a model of the communication channel,

wherein the receiver mitigates baseline effects to the response signal by subtracting the estimated baseline signal from the response signal.

31. The system of claim 30, wherein the baseline signal comprises a near-end echo of the narrowband stimulus signal associated with transmission of the narrowband stimulus signal, and

wherein the response signal comprises the near-end echo and reflections of the narrowband stimulus signal by discontinuities of the communication channel.

32. The system of claim 27, comprising:

a correlator for performing frequency domain correlation between a frequency domain representation of the response signal and frequency domain representations of

a plurality of time-delayed versions of the narrowband stimulus signal to generate frequency domain correlation information; and

an analyzer for identifying correlation peaks in a magnitude of the frequency domain correlation information to determine locations of discontinuities of the communication channel,

wherein identified correlation peaks are associated with the locations of the discontinuities of the communication channel.

33. The system of claim 32, wherein the correlator performs a Fourier transform on the response signal to generate the frequency domain representation of the response signal,

wherein the correlator generates the plurality of time-delayed versions of the narrowband stimulus signal, and

wherein the correlator performs Fourier transforms on the plurality of time-delayed versions of the narrowband stimulus signal to generate the frequency domain representations of the plurality of time-delayed versions of the narrowband stimulus signal.

34. The system of claim 32, wherein the analyzer examines phase information associated with the frequency domain correlation information of the response signal relative to an associated time-delayed version of the narrowband stimulus signal to determine a type of a discontinuity of the communication channel.

35. The system of claim 32, wherein the analyzer determines round trip loss of the communication channel to the determined location of the discontinuity using an amplitude of the identified correlation peak and an amplitude of a reference correlation peak.

36. The system of claim 35, wherein the analyzer determines path loss of the communication channel to the determined location of the discontinuity using the determined round trip loss and at least one characteristic of a type of the discontinuity.

37. A stimulus-response method for determining characteristics associated with a communication channel, comprising the steps of:

generating a stimulus signal,

wherein the stimulus signal comprises a narrowband stimulus signal, and

wherein the narrowband stimulus signal mitigates effects of dispersion associated with the communication channel; and

receiving a response signal via the communication channel in response to the narrowband stimulus signal,

wherein the response signal comprises at least one reflection of the narrowband stimulus signal from at least one discontinuity of the communication channel.